The NCEP Climate Forecast System Reanalysis (CFSR)

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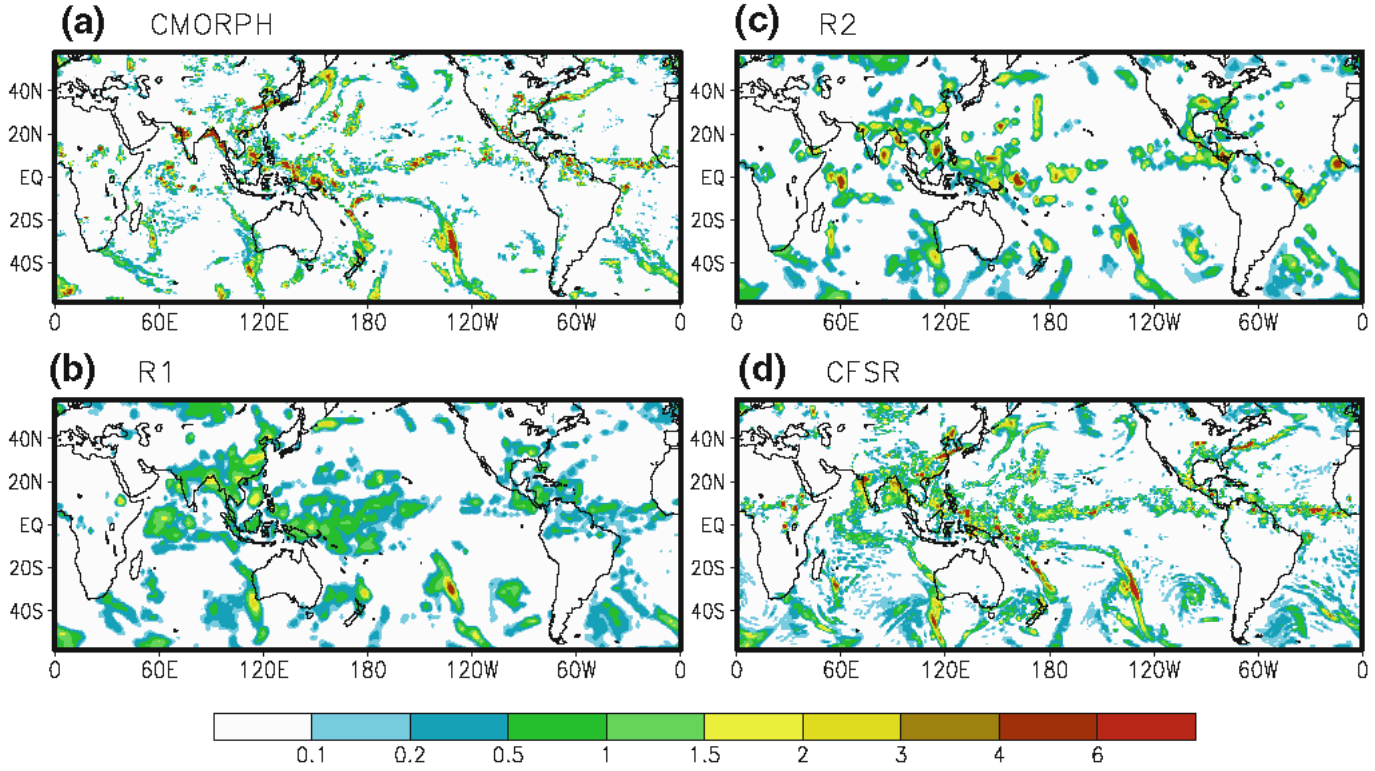
Climate Forecast System Reanalysis (CFSR)

- **Some features**
  - ***1979 – present; updated in real-time***
  - ***Executed in six parallel streams with one year overlap***
  - ***Partially coupled reanalysis; T384L62 atmospheric model; MOM4 ocean model***
- **Data availability**
  - ***From NCDC***
  - ***http://cfs.ncep.noaa.gov/cfsr/***
  - ***http://nomads.ncdc.noaa.gov/data.php?name=access#cfs***

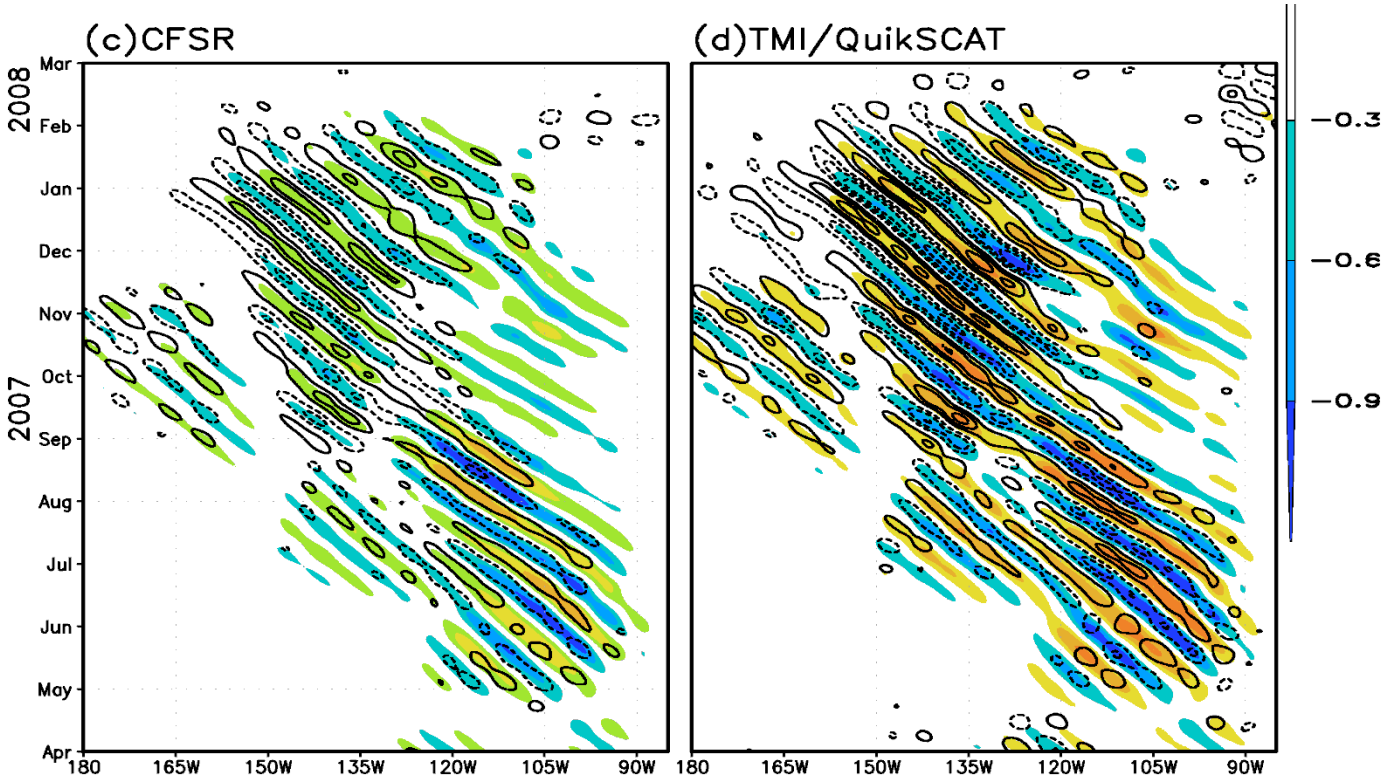
Variability on Daily Time Scale

Strength – Depiction of High Frequency Variability

Rainfall – Synoptic Features



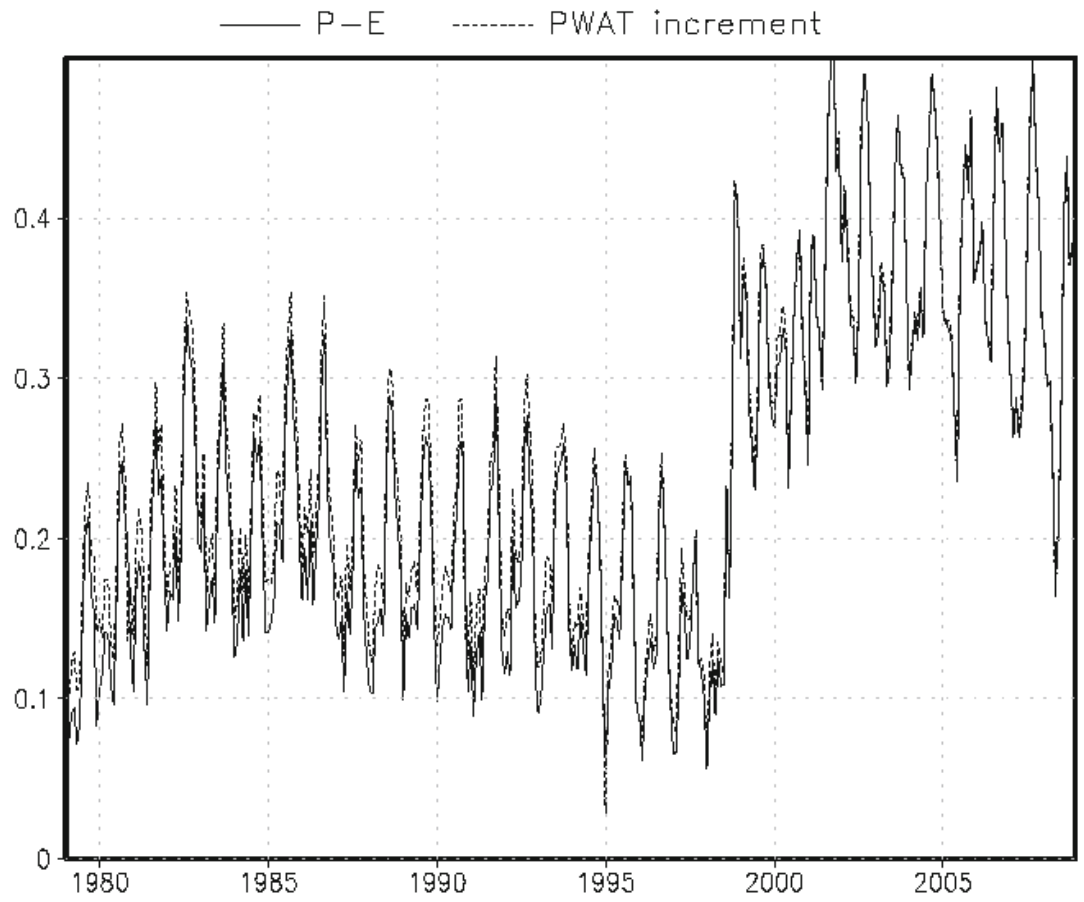
Tropical Instability Waves (TIW)



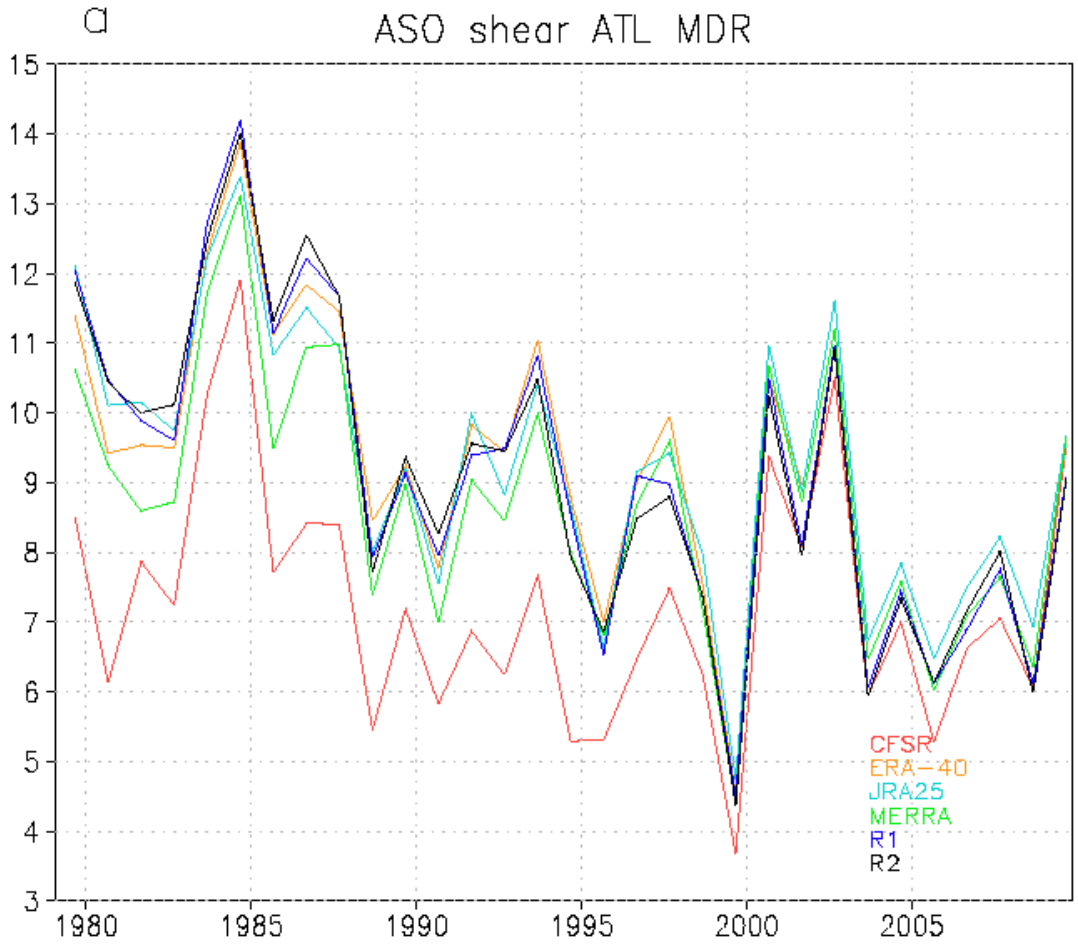
SST (Shading) ; 10-M Wind (Contour)

Low-Frequency Variability

Precipitable Water & P-E



Wind Shear - MDR



Summary

- **Evaluation of the CFSR**
  - ***Much more realistic high-frequency (synoptic) variability***
  - ***Issues with low-frequency variability, particularly with slowly evolving components of the Earth System***
- **Comparison with other reanalyses**
  - ***Outlier in some cases***

Various Analysis Summarized in...

- **Wang et al., 2011: An assessment of the surface climate in the NCEP climate forecast system reanalysis. *Climate Dynamics.* 37**:1601–1620
- **Chelliah et al., 2011: Evaluating the tropospheric variability in National Centers for Environmental Prediction's climate forecast system reanalysis. *JGR-Atmosphere,* 116,** doi:10.1029/2011JD015707,
- **Xue et al., 2011: An assessment of oceanic variability in the NCEP climate forecast system reanalysis. *Climate Dynamics.* 37**:2511–2539
- **Ebisuzaki et al., 2011: Assessing the performance of the CFSR by an ensemble of analyses. *Climate Dynamics.***
- **Zhang et al., 2012: Influence of Changes in Observations on Reanalysis Products: A Case Study for the CFSR, *JGR-Atmosphere*, To appear.**
- **Wen et al., 2012: Ocean-Atmosphere characteristics of Tropical Instability Waves Simulated in the NCEP Climate Forecast System Reanalysis. *J. Climate*, conditionally accepted.**